IN THE CLAIMS:

1. (Currently Amended) A method, comprising:

operating an implantation tool ~~with~~ to ionize a first species including a first dopant;

after operating said implantation tool to ionize said first species, operating said implantation tool ~~with~~ to ionize xenon as an implant precursor to reduce residues of said first species in said implantation tool; and

after operating said implantation tool to ionize said xenon, operating said implantation tool ~~with~~ to ionize a second species including a second dopant.

2. (Original) The method of claim 1, wherein said first dopant comprises at least one of arsenic, indium and antimony.

3. (Original) The method of claim 2, wherein said second dopant comprises one of boron and phosphorus.

4. (Currently Amended) The method of claim 1, wherein said ionized xenon is accelerated with an energy in the range of approximately 30-200 keV.

5. (Currently Amended) The method of claim 1, wherein said ionized xenon is accelerated with an energy in the range of approximately 40-160 keV.

6. (Currently Amended) The method of claim 1, wherein a dose of xenon is in the range of approximately 1×10^{13} to 1×10^{14} ions/cm^2 when operating said implantation tool ~~with~~ to ionize said xenon.

7. (Currently Amended) The method of claim 1, wherein said implantation tool is operated ~~with~~ to ionize xenon for a time interval in the range of approximately 2-10 minutes.

8. (Currently Amended) The method of claim 1, further comprising purging and evacuating said implantation tool at least once prior to operating said implantation tool ~~with~~ to ionize said second species.

9. (Currently Amended) The method of claim 1, wherein operating said implantation tool ~~with~~ to ionize said first species includes implanting said first dopant into a semiconductor region of a substrate to form one of a well profile and a halo profile for a transistor structure.

10. (Currently Amended) The method of claim 9, wherein operating said implantation tool ~~with~~ to ionize said xenon includes implanting xenon ions into said semiconductor region to amorphize a portion thereof.

11. (Currently Amended) The method of claim 1, wherein operating said implantation tool ~~with~~ to ionize said xenon is performed without a substrate placed in said implantation tool.

12. (Currently Amended) The method of claim 1, wherein operating said implantation tool ~~with~~ to ionize said xenon is performed with a substrate that has not been exposed to said first species.

13. (Currently Amended) A method of doping a substrate, the method comprising:

operating an implantation tool ~~with~~ to ionize xenon as the implantation species prior to installing said substrate in the implantation tool to reduce contaminating particles; and

after operating said implantation tool to ionize said xenon, operating said implantation tool with the substrate mounted therein to ionize and implant a first species of dopants in the substrate.

14. (Currently Amended) The method of claim 13, further comprising operating said implantation tool ~~with~~ to ionize a second species other than said first species prior to operating said implantation tool ~~with~~ to ionize said xenon.

15. (Original) The method of claim 13, wherein said first species is one of arsenic, indium, antimony, boron and phosphorus.

16. (Original) The method of claim 14, wherein said second species is one of arsenic, indium, antimony, boron and phosphorus.

17. (Original) The method of claim 14, wherein said first species is one of boron and phosphorus.

18. (Original) The method of claim 14, wherein said second species is one of arsenic, indium and antimony.

19. (Currently Amended) The method of claim 13, wherein said ionized xenon is accelerated with an energy in the range of approximately 30-200 keV.

20. (Currently Amended) The method of claim 13, wherein said ionized xenon is accelerated with an energy in the range of approximately 40-160 keV.

21. (Currently Amended) The method of claim 13, wherein a dose of xenon is in the range of approximately 1×10^{13} to 1×10^{14} ions/cm^2 when operating said implantation tool ~~with~~ to ionize said xenon.

22. (Currently Amended) The method of claim 13, wherein said implantation tool is operated ~~with~~ to ionize said xenon for a time interval in the range of approximately 2-10 minutes.

23. (Currently Amended) A method of doping substrates, the method comprising:

mounting a substrate in an implantation tool;

operating said implantation tool ~~with~~ to ionize a first species of dopants to implant said first dopant into a crystalline region of said substrate;

after operating said implantation tool to ionize said first species, operating said implantation tool ~~with~~ to ionize xenon as the implantation species to substantially amorphize a portion of said crystalline region; and

after operating said implantation tool to ionize said xenon, operating said implantation tool ~~with~~ to ionize a second species of dopants to implant said second dopant into said substantially amorphized portion.

24. (Currently Amended) The method of claim 23, wherein said ionized xenon is implanted with an energy in the range of approximately 30-200 keV.

25. (Currently Amended) The method of claim 23, wherein said ionized xenon is implanted with an energy in the range of approximately 40-160 keV.

26. (Currently Amended) The method of claim 23, wherein a dose of xenon is in the range of approximately 1×10^{13} to 1×10^{14} ions/cm^2 when operating said implantation tool ~~with~~ to ionize said xenon.

27. (Currently Amended) The method of claim 23, further comprising, prior to amorphizing said portion, operating said implantation tool ~~with~~ to ionize said xenon when said substrate is removed from said implantation tool to reduce residues of said first species.